

### REMARKS/ARGUMENTS

This is a Response to the Office Action mailed November 1, 2005, in which a three (3) month Shortened Statutory Period for Response has been set, due to expire February 1, 2006. Six (6) claims, including one (1) independent claim, were paid for in the application. Claims 4-6 have been canceled. Claim 1 has been amended. No new matter has been added to the application. No fee for additional claims is due by way of this Amendment. The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090. Claims 1-3 are pending.

#### Objections

The Examiner objected to the specification because of informalities. The informalities noted by the Examiner have been corrected by the amendments above.

The Abstract has been objected to on the basis that it includes more than one paragraph. The Abstract has been rewritten to include one paragraph under 150 words in length.

Claims 1-6 were objected to because of informalities, which are corrected by the amendments above.

#### Rejections Under 35 U.S.C. § 102(b) and 35 U.S.C. § 102(e)

Claims 1-2 were rejected under 35 U.S.C. § 102(b) as being anticipated by Chou et al. (W. Chou, M.A. Neifeld, 'Interleaving and error correction in volume holographic memory systems', Appl. Opt., vol. 37, no. 29, October 10, 1998, pp. 6951-6968.), hereinafter Chou.

Claim 1 was rejected under 35 U.S.C. § 102(e) as being anticipated by Waldman et al. (U.S. Patent Application Publication US 2005/0134948 A1), hereinafter Waldman.

The exemplary embodiments of Applicant's invention are directed to a holographic recording and reproducing apparatus for recording data as phase information of light in a holographic recording medium by projecting a signal beam and a reference beam onto the holographic recording medium. More specifically, according to amended claim 1, the holographic recording and reproducing apparatus includes, *inter alia*, "a spatial light modulator, a Fourier transform lens, a reverse Fourier transform lens, a charge coupled device (CCD) image

sensor, and *a pinhole disposed at a confocal point of the Fourier transform lens and the reverse Fourier transform lens*, the holographic recording medium being disposed between the Fourier transform lens and the reverse Fourier transform lens, and the focal length of the Fourier transform lens and focal length of the reverse Fourier transform lens being different from each other, and *the pinhole being disposed between the holographic recording medium and the Fourier transform lens or between the holographic recording medium and the reverse Fourier transform lens* (emphasis added).

In the structure having the pinhole or aperture positioned between the holographic recording medium and the reverse Fourier transform lens, the reproduced beam that is diffracted by the interference pattern enters the CCD image sensor through the aperture and a noise component of the reproduced beam is removed. For a pinhole positioned between the holographic recording medium and Fourier transform lens, the signal beam is projected onto the holographic recording medium through the pinhole, thereby allowing for the removal of the noise component from the signal beam.

Chou and Waldman fail to disclose a pinhole or aperture that is disposed within the holographic recording and reproducing apparatus. Therefore, Chou and Waldman do not teach or suggest all the limitations of claim 1, as amended. Consequently, the Applicant respectfully asserts that independent claim 1 is allowable under 35 U.S.C. § 102(b) and 35 U.S.C. § 102(e) as is dependent claim 2, which includes all the limitations of amended claim 1.

Further in the Office Action, the Examiner rejects claims 4-6 under 35 U.S.C. § 103(a) as being unpatentable over Chou et al. in view of Bernal et al. Since the Applicant has elected to cancel claims 4-6 and add the limitations of those claims to amended independent claim 1, it is appropriate at this point to further discuss the patentability of amended claim 1 over Bernal et al, hereinafter Bernal.

Bernal discloses a holographic recording material that is positioned "at the Fourier plane of the 4f configuration." The Fourier plane is located at the center region between the first Fourier lens (L1) and second Fourier lens (L2). Bernal further states that "it is useful to place an aperture at the Fourier plane," thereby disclosing that the aperture, which corresponds to the pinhole, is also disposed at the Fourier plane.

It is therefore suggested and illustrated in the holographic and reproducing apparatus disclosed by Bernal that both the holographic recording material and aperture, corresponding to the pinhole of the present invention, are disposed at the Fourier plane and the pinhole is *not* disposed between the holographic recording medium and the Fourier transform lens or between the holographic recording medium and the reverse Fourier transform lens, as recited in Applicant's amended claim 1.

Therefore, the holographic recording and reproducing apparatus disclosed in Bernal has an essentially different configuration as that of the *holographic recording and reproducing apparatus* defined in amended claim 1. Therefore, amended claim 1 is unobvious over Bernal.

#### Rejections Under 35 U.S.C. § 103

Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Chou et al. (W. Chou, M.A. Neifeld, 'Interleaving and error correction in volume holographic memory systems', Appl. Opt., vol. 37, no. 29, October 10, 1998, pp. 6951-6968.).

As discussed above, Chou does not teach or suggest all the limitations of amended claim 1, thereby placing claim 1 in condition for allowance. Claim 3 is dependent upon claim 1 and includes all the limitations of the base claim. Therefore, Applicant respectfully asserts that dependent claim 3 is allowable under 35 U.S.C. § 103(a).

Claims 4-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Chou et al. in view of Bernal et al. (M.P. Bernal, G. W. Burr, H. Coufal, M. Quintanilla, 'Noise in high-areal-density holographic data storage systems', Opt. Soc. America, Washington, D.C., USA, May 1998, pp. 21-22.), hereinafter Bernal.

Claims 4-6 have been cancelled therefore the rejection under 35 U.S.C. § 103(a) is now moot.

#### Conclusion

Overall, the cited references do not singly, or in any motivated combination, teach or suggest the claimed features of the embodiments recited in independent claim 1, and thus the

claim is allowable. Because the remaining claims depend from the allowable independent claim, and also because they include additional limitations, such claims are likewise allowable. If the undersigned attorney has overlooked a relevant teaching in any of the references, the Examiner is requested to point out specifically where such teaching may be found.

In light of the above amendments and remarks, Applicant respectfully submits that all pending claims are allowable. Applicant, therefore, respectfully requests that the Examiner reconsider this application and timely allow all pending claims. Examiner is encouraged to contact Mr. Carlson by telephone to discuss the above and any other distinctions between the claims and the applied references, if desired. If the Examiner notes any informalities in the claims, he is encouraged to contact Mr. Carlson by telephone to expediently correct such informalities.

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,

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